



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

10/616,564

07/10/2003

Jay P. Gore

3220-73090

2789

23643

7590

11/15/2005

BARNES & THORNBURG
11 SOUTH MERIDIAN
INDIANAPOLIS, IN 46204

EXAMINER

POLYZOS, FAYE S

ART UNIT

PAPER NUMBER

2884

DATE MAILED: 11/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/616,564

Applicant(s)

GORE ET AL.

Examiner

Faye Polyzos

Art Unit

2884

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 August 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Comment on Submissions

1. This communication is responsive to submissions 24 August 2005.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-2,7-8,11-12,16-20,22-23 and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Clarke (US 5,239,180 A).

Regarding claim 1, Clarke discloses a method of measuring an amount of organic substance contained within a food product, the organic substance (food material) having an infrared absorption spectrum which includes a set (n) (i.e. 500 nm-2000 nm) of wavelength regions, wherein each of the wavelength regions substantially corresponds to an absorption band of the absorption spectrum (col. 1, lines 56-68 and col. 2, lines 1-4), detecting the intensity of a number of selected wavelength bands of infrared electromagnetic radiation influenced by the organic substance contained within the food product with a detection system wherein each of the selected wavelength bands substantially corresponds to one of the wavelength regions and the number of the selected wavelength bands is equal to n-1 or less (i.e. at least two of wavelengths) (col. 3, lines 19-25); generating an electrical signal in response to detecting the intensity of the number of selected wavelength bands; receiving the electrical signal with a

quantification algorithm (col. 3, lines 19-41); and processing the electrical signal with the quantification algorithm so as to provide a measurement of the amount of organic substance contained within the food product (See Generally Figs. 5-6 and col. 3, lines 42-67).

Regarding claim 2, Clarke discloses a quantification algorithm of dividing a first wavelength band integrated absorbance value by a reference wavelength band integrated absorbance value (col. 2 lines 5-19).

Regarding claim 7, Clarke discloses a method of measuring an amount of a food material, which encompasses a vegetable seed oil, (col. 1, lines 56-63) in a food product, wherein the vegetable seed oil has an infrared absorption spectrum which includes a set (n) (i.e. 500 nm-2000 nm) of infrared wavelength regions, wherein each of the infrared wavelength regions substantially correspond to an infrared absorption band of the infrared absorption spectrum (col. 1, lines 56-68 and col. 2, lines 1-4), comprising: detecting the transmittance of a number of selected wavelength bands of infrared electromagnetic radiation absorbed by the vegetable seed oil contained within the food product with a detection system, wherein each of the selected wavelength bands substantially corresponds to one of the wavelength regions and the number of the selected wavelength bands is equal to n-1 or less (i.e. at least two of wavelengths) (col. 3, lines 19-25); generating an electrical signal in response to detecting the transmittance of the infrared electromagnetic radiation; receiving electrical signal with a signal processor configured to process the electrical signal with a quantification algorithm (col. 3, lines 19-41); and processing the electrical signal with the quantification

algorithm so as to provide a measurement of the amount of vegetable seed oil contained within the food product (See Generally Figs. 5-6 and col. 3, lines 42-67).

Regarding claim 8, Clarke discloses a quantification algorithm of dividing a first wavelength band integrated absorbance value by a reference wavelength band integrated absorbance value (col. 2 lines 5-19).

Regarding claim 11, Clarke discloses the food product includes food material, which encompasses the food extract olive oil (col. 1, lines 59-63).

Regarding claim 12, Clarke discloses a method of measuring an amount of milk fat (dairy product ingredient) (col. 1, lines 56-63) in a food product, wherein the milk fat has an infrared absorption spectrum which includes a set (n) (i.e. 500 nm-2000 nm) of infrared wavelength regions, wherein each of the infrared wavelength regions substantially correspond to an infrared absorption band of the infrared absorption spectrum (col. 1, lines 56-68 and col. 2, lines 1-4), comprising: detecting the transmittance of a number of selected wavelength bands of infrared electromagnetic radiation absorbed by the vegetable seed oil contained within the food product with a detection system, wherein each of the selected wavelength bands substantially corresponds to one of the wavelength regions and the number of the selected wavelength bands is equal to $n-1$ or less (i.e. at least two of wavelengths) (col. 3, lines 19-25); generating an electrical signal in response to detecting the transmittance of the infrared electromagnetic radiation; receiving electrical signal with a signal processor configured to process the electrical signal with a quantification algorithm (col. 3, lines 19-41); and processing the electrical signal with the quantification algorithm so as to

provide a measurement of the amount of vegetable seed oil contained within the food product. (See Generally Figs. 5-6 and col. 3, lines 42-67).

Regarding claim 16, Clarke discloses the food product includes dairy products and beverages (i.e. milk) (col. 1, lines 56-63).

Regarding claim 17, Clarke discloses a method of measuring a concentration of an organic substance contained within a food product (col. 1, lines 56-63), the organic substance having an infrared absorption spectrum which includes a set (n) (i.e. 500 nm-2000 nm) of infrared wavelength regions, wherein each of the infrared wavelength regions substantially correspond to an infrared absorption band of the infrared absorption spectrum, comprising: detecting the transmittance of a number of selected wavelength bands of infrared electromagnetic radiation absorbed by the organic substance contained within the food product with a detection system, wherein each of the selected wavelength bands substantially corresponds to one of the wavelength regions and the number of the selected wavelength bands is equal to n-1 or less (i.e. at least two of wavelengths) (col. 3, lines 19-25); generating an electrical signal in response to detecting the transmittance of the selected infrared electromagnetic radiation wavelength bands (col. 3, lines 36-55); receiving the electrical signal with a signal processor configured to process the electrical signal with a mathematical model and processing the electrical signal with the mathematical model so as to provide a measurement of the concentration of the organic substance contained within the food product (See Generally Figs. 2 and 5-6, col. 3, lines 57-68 and col. 2, lines 5-19 and col. 4, lines).

Regarding claims 18-19, Clarke discloses the transmittance of the selected electromagnetic radiation wavelength bands absorbed by food material: meat, poultry, fish, seafood, fruit, vegetables, cereals, grains, seeds, dairy products, and beverages as well as food extracts, ingredients, nutrients and /or additives, contained within the food product with the detection system (col. 1, lines 56-65).

Regarding claim 20, Clarke discloses dividing a first wavelength band integrated absorbance value by a reference wavelength band integrated absorbance value (col. 2 lines 5-19).

Regarding claim 22, Clarke discloses a method of measuring an organic substance (food material) (col. 1, lines 56-63) contained within a food product, the organic substance having infrared absorption spectrum which includes a set (n) of wavelength regions, wherein each of the wavelength regions substantially corresponds to an absorption band of the absorption spectrum, comprising: illuminating the food product with infrared electromagnetic radiation, wherein the infrared electromagnetic radiation includes one or more wavelength bands of infrared electromagnetic radiation which are absorbed by the organic substance contained within the food product (col. 2, lines 5-29); selecting a number of the wavelength bands of the infrared electromagnetic radiation, wherein each of the selected wavelength bands substantially corresponds to one of the wavelength regions and the number of the selected wavelength bands is a subset of (n); detecting the intensity of only the subset of the selected wavelength bands absorbed by the organic substance (food material) contained within the food product with a detection system and the number of reference wavelength bands;

generating one or more electrical signals in response to detecting the intensity of only the subset of the selected wavelength bands (col. 3, lines 36-55); receiving the one or more electrical signals with a signal processor configured to process the electrical signals with a quantum algorithm (col. 3, lines 19-41); and processing the one or more electrical signals with the quantification algorithm so as to provide a measurement of the amount of the organic substance (food material) contained within the food product (See Generally Figs. 5-6 and col. 3, lines 42-67).

Regarding claim 23, Clarke discloses a method of measuring an organic substance (food material) (col. 1, lines 56-63) contained within a food product, the organic substance having infrared absorption spectrum which includes a set (n) (i.e. 500 nm-2000 nm) of wavelength regions, wherein each of the wavelength regions substantially corresponds to an absorption band of the absorption spectrum, comprising: illuminating the food product with infrared electromagnetic radiation (col. 2, lines 5-29); detecting the intensity of the infrared electromagnetic radiation that is absorbed by the organic substance (food material) contained within the food product, wherein the intensity detected is restricted to a number of selected wavelength bands of infrared electromagnetic radiation each of the selected wavelength bands substantially corresponds to one of the wavelength regions and the number of the selected wavelength bands is a subset of (n) (col. 3, lines 36-55); generating an electrical signal in response to detecting the intensity of the subset of the selected wavelength bands; receiving the electrical signals with a signal processor configured to process the electrical signals with a quantum algorithm (col. 3, lines 19-41); and processing the

electrical signals with the quantification algorithm so as to provide a measurement of the amount of the organic substance (food material) contained within the food product (See Generally Figs. 5-6 and col. 3, lines 42-67).

Regarding claim 25, Clarke discloses a method of measuring an organic substance (food material) (col. 1, lines 56-63) contained within a food product, the organic substance having infrared absorption spectrum which includes a set (n) (i.e. 500 nm-2000 nm) of wavelength regions, wherein each of the wavelength regions substantially corresponds to an absorption band of the absorption spectrum, comprising: illuminating the food product with infrared electromagnetic radiation, wherein the infrared electromagnetic radiation includes one or more wavelength bands of infrared electromagnetic radiation which are absorbed by the organic substance contained within the food product (col. 2, lines 5-29); selecting a number of the wavelength bands of the infrared electromagnetic radiation, wherein each of the selected wavelength bands substantially corresponds to one of the wavelength regions and the number of the selected wavelength bands is a subset of (n); detecting with a detection system the intensity of the infrared electromagnetic radiation (col. 3, lines 19-25); and processing with a mathematical model spectral data only from the subset of the selected wavelength bands absorbed by the organic substance (food material) contained within the food product (col. 2 lines 5-19).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Clarke (US 5,239,180 A)* as applied to claim 1 above, and further in view of *Passaloglou-Emmanouillidou ("A comparative study of UV spectrophotometric methods for detection of olive oil adulteration by refined oils", Vol. 191)*.

Regarding claims 3 and 5, Clarke discloses a method of measuring an amount of organic substance contained within a food product, the organic substance (food material) having an infrared absorption spectrum which includes a set (n) (i.e. 500 nm-2000 nm) of wavelength regions, wherein each of the wavelength regions substantially corresponds to an absorption band of the absorption spectrum (col. 1, lines 56-68 and col. 2, lines 1-4), detecting the intensity of a number of selected wavelength bands of infrared electromagnetic radiation influenced by the organic substance contained within the food product with a detection system wherein each of the selected wavelength bands substantially corresponds to one of the wavelength regions and the number of the selected wavelength bands is equal to n-1 or less (i.e. at least two of wavelengths) (col. 3, lines 19-25); generating an electrical signal in response to detecting the intensity of the number of selected wavelength bands; receiving the electrical signal with a quantification algorithm (col. 3, lines 19-41); and processing the electrical signal with the quantification algorithm so as to provide a measurement of the amount of organic substance contained within the food product (See Generally Figs. 5-6 and col. 3, lines 42-67). Clarke does not disclose of detecting the transmittance of about 905 – 930 cm

cm^{-1} wavelength band of infrared electromagnetic radiation being about $880 - 890 \text{ cm}^{-1}$ wavelength band of infrared electromagnetic radiation. *Passaloglou-Emmanouillidou* discloses detecting the intensity of about a $905 - 930 \text{ cm}^{-1}$ wavelength band of infrared electromagnetic radiation being about $880 - 890 \text{ cm}^{-1}$ wavelength band of infrared electromagnetic radiation (See Generally Figs. 1A,B). Since the transmittance in this wavelength band is effective for the determination of an organic substance such as; olive oil, as described by *Passaloglou-Emmanouillidou*, it would have been obvious to one skilled in the art to modify the method suggested by Clarke to comprise of the wavelength band as disclosed supra by *Passaloglou-Emmanouillidou* to allow for a more versatile apparatus.

Regarding claims 4 and 6, *Passaloglou-Emmanouillidou* discloses detecting the intensity of about a $2905 - 2945 \text{ cm}^{-1}$ wavelength band of infrared electromagnetic radiation being about $2840 - 2870 \text{ cm}^{-1}$ wavelength band of infrared electromagnetic radiation (See Generally Fig. 1). Since the transmittance in this wavelength band is effective for the determination of an organic substance such as; olive oil, as described by *Passaloglou-Emmanouillidou*, it would have been obvious to one skilled in the art to modify the method suggested by Clarke to comprise of the wavelength band as disclosed supra by *Passaloglou-Emmanouillidou* to allow for a more versatile apparatus.

5. Claims 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Clarke (US 5,239,180 A)* as applied to claim 1 above, and further in view of *Passaloglou-Emmanouillidou ("A comparative study of UV spectrophotometric methods for detection of olive oil adulteration by refined oils", Vol. 191).*

Regarding claims 9-10, Clarke discloses a method of measuring an amount of a food material, which encompasses a vegetable seed oil, (col. 1, lines 56-63) in a food product, wherein the vegetable seed oil has an infrared absorption spectrum which includes a set (n) (i.e. 500 nm-2000 nm) of infrared wavelength regions, wherein each of the infrared wavelength regions substantially correspond to an infrared absorption band of the infrared absorption spectrum (col. 1, lines 56-68 and col. 2, lines 1-4), comprising: detecting the transmittance of a number of selected wavelength bands of infrared electromagnetic radiation absorbed by the vegetable seed oil contained within the food product with a detection system, wherein each of the selected wavelength bands substantially corresponds to one of the wavelength regions and the number of the selected wavelength bands is equal to n-1 or less (i.e. at least two of wavelengths) (col. 3, lines 19-25); generating an electrical signal in response to detecting the transmittance of the infrared electromagnetic radiation; receiving electrical signal with a signal processor configured to process the electrical signal with a quantification algorithm (col. 3, lines 19-41); and processing the electrical signal with the quantification algorithm so as to provide a measurement of the amount of vegetable seed oil contained within the food product (See Generally Figs. 5-6 and col. 3, lines 42-67). Clarke does not disclose of detecting the transmittance of about 905-930 cm^{-1} and 880-890 cm^{-1} wavelength band of infrared electromagnetic radiation. *Passaloglou-Emmanouillidou* discloses detecting the intensity of about a 905 – 930 cm^{-1} wavelength band of infrared electromagnetic radiation being about 880 – 890 cm^{-1} wavelength band of infrared electromagnetic radiation and selecting infrared wavelength

bands within a range of about 800-1000 cm^{-1} (See Generally Figs. 1A,B). Since the transmittance in this wavelength band is effective for the determination of an organic substance such as; olive oil, as described by *Passaloglou-Emmanouillidou*, it would have been obvious to one skilled in the art to modify the method suggested by Clarke to comprise of the wavelength band as disclosed supra by *Passaloglou-Emmanouillidou* to allow for a more versatile apparatus.

6. Claims 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clarke (US 5,239,180 A) as applied to claim 12 above, and further in view of *Lefier et al* ("*Determination of Fat, Protein, and Lactose in Raw Milk by Fourier Transform Infrared Spectroscopy and by Analysis with a Conventional Filter-Based Milk Analyzer*", 1996, Vol. 79).

Regarding claims 13, Clarke discloses a method of measuring an amount of milk fat (dairy product ingredient) (col. 1, lines 56-63) in a food product, wherein the milk fat has an infrared absorption spectrum which includes a set (n) (i.e. 500 nm-2000 nm) of infrared wavelength regions, wherein each of the infrared wavelength regions substantially correspond to an infrared absorption band of the infrared absorption spectrum (col. 1, lines 56-68 and col. 2, lines 1-4), comprising: detecting the transmittance of a number of selected wavelength bands of infrared electromagnetic radiation absorbed by the vegetable seed oil contained within the food product with a detection system, wherein each of the selected wavelength bands substantially corresponds to one of the wavelength regions and the number of the selected wavelength bands is equal to n-1 or less (i.e. at least two of wavelengths) (col. 3, lines

19-25); generating an electrical signal in response to detecting the transmittance of the infrared electromagnetic radiation; receiving electrical signal with a signal processor configured to process the electrical signal with a quantification algorithm (col. 3, lines 19-41); and processing the electrical signal with the quantification algorithm so as to provide a measurement of the amount of vegetable seed oil contained within the food product. (See Generally Figs. 5-6 and col. 3, lines 42-67). Clarke does not specifically disclose of detecting the transmittance of about $2905 - 2945 \text{ cm}^{-1}$ wavelength band. *Lefier* discloses detecting the transmittance of about $2905 - 2945 \text{ cm}^{-1}$ wavelength band of infrared electromagnetic radiation (pg. 713 and col. 1). *Lefier* teaches the transmittance in this wavelength band is effective for the determination of milk fat. Therefore, it would have been obvious to modify the method suggested by Clarke to include a detected transmittance wavelength band as disclosed supra by *Lefier*, to allow for a more versatile apparatus.

Regarding claim 14, *Lefier* discloses detecting the transmittance of about $2840 - 2870 \text{ cm}^{-1}$ wavelength band of infrared electromagnetic radiation (pg. 713 and col. 1).

Regarding claim 15, *Lefier* discloses the number of selected infrared wavelength bands of (a) are within a range defined by approximately $2800-3000 \text{ cm}^{-1}$ (pg. 713 and col. 1).

Allowable Subject Matter

7. Claims 21 and 24 are objected to as being dependent upon a rejected based claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter:

Regarding dependent claim 21, the prior art, as stated supra, does not disclose or fairly suggest of a mathematical model includes an algorithmic equation, as disclosed in claim 21, to measure the concentration of an organic substance.

Regarding dependent claim 24, the prior art, as stated supra, does not disclose or fairly suggest of detecting the intensity of one or more reference wavelengths band of infrared electromagnetic radiation which are not absorbed by the organic substance contained in the food product.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Faye Polyzos whose telephone number is 571-272-2447. The examiner can normally be reached on Monday thru Friday from 7:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Porta can be reached on 571-272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

11. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

FP

OTILIA GABOR
PRIMARY EXAMINER

